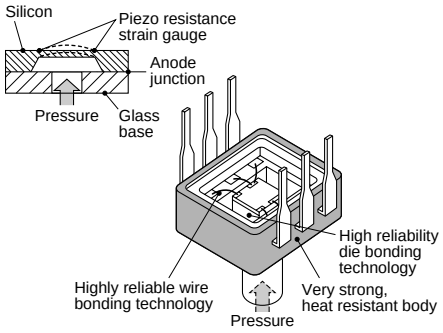
NAiS

ULTRA SMALL HIGHLY SEMICONDUCTOR PRESSURE SENSOR

PS PRESSURE SENSOR

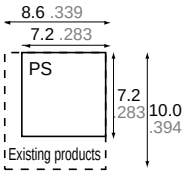
<Actual size>

<Cross-section of Sensor Chip>



FEATURES

- **Ultra-miniature size: much more compact than the PF pressure sensors offered in the past**
  - Base area: 7.2(W) x 7.2(D) mm .283(W) x .283(D) inch
  - Only 60% in mounting area and 91% in overall height of previous models (PF)



- **High-level precision and linearity**

A high degree of precision and linear detector response have been achieved by applying the semiconductor strain gauge system. Highly reproducible based on repeated pressure.

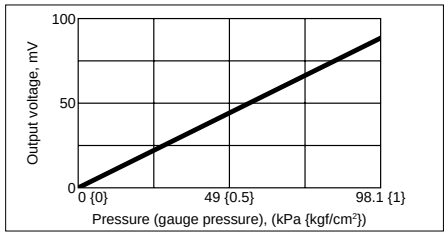
- **Impressive line-up of models**
  - Taking their place alongside the standard 5kΩ bridge resistance models are those with a 3.3kΩ resistance which is optimally suited to 5V drive circuits.
  - Economy model (no glass base) gives outstanding value for consumer appliances 40 kPa (0.4 kgf/cm²) and 49 kPa (0.5 kgf/cm²) units are also available.
- **Improved ease of DIP pin insertion into printed circuit boards**

The ends of the DIP pins are chamfered to ensure easy insertion into printed circuit

Example of pressure characteristics

(when the rated pressure is between 98.1 kPa {1.0 kgf/cm²})

Drive current: 1.5 mA rated current; ambient temperature: 25°C 77°F



TYPICAL APPLICATIONS

- Medical equipment: Electronic hemodynamometer
- Home appliance: Vacuum cleaner
- Gas equipment: Microprocessor gas meter, gas leakage detector
- Industrial equipment: Absorption device, etc.

ORDERING INFORMATION

Ex. ADP 4 ☐ ☐ ☐ ☐

Part No.	Terminal profile and direction	Rated pressure	Type	Bridge resistance
ADP4: PS pressure sensor	1: DIP terminal: Direction opposite the pressure inlet direction  2: DIP terminal: Pressure inlet direction 	0: 4.9 kPa {approx. 0.05 kgf/cm²} 1: 14.7 kPa {approx. 0.15 kgf/cm²} 2: 34.3 kPa {approx. 0.35 kgf/cm²} 3: 49.0 kPa {approx. 0.5 kgf/cm²} 4: 98.1 kPa {approx. 1.0 kgf/cm²} 5: 196.1 kPa {approx. 2.0 kgf/cm²} 6: 343.2 kPa {approx. 3.5 kgf/cm²} 7: 490.3 kPa {approx. 5.0 kgf/cm²} 8: 833.6 kPa {approx. 8.5 kgf/cm²} 9: 980.7 kPa {approx. 10.0 kgf/cm²} A: 40.0 kPa {approx. 0.4 kgf/cm²}	1 : Standard type (With glass base) 2: Economy type (Without glass base)	0 : 5.0kΩ 3 : 3.3kΩ

Pressure \ Terminal			Bridge resistance: 5.0kΩ		Bridge resistance: 3.3kΩ	
			DIP terminal: Direction opposite the pressure inlet direction 	DIP terminal: Pressure inlet direction 	DIP terminal: Direction opposite the pressure inlet direction 	DIP terminal: Pressure inlet direction 
Standard type (With glass base)	4.9kPa	approx. 0.05kgf/cm²	ADP41010	ADP42010	——	——
	14.7kPa	approx. 0.15kgf/cm²	ADP41110	ADP42110	——	——
	34.3kPa	approx. 0.35kgf/cm²	ADP41210	ADP42210	——	——
	49.0kPa	approx. 0.5kgf/cm²	ADP41310	ADP42310	——	——
	98.1kPa	approx. 1.0kgf/cm²	ADP41410	ADP42410	ADP41413	ADP42413
	196.1kPa	approx. 2.0kgf/cm²	ADP41510	ADP42510	——	——
	343.2kPa	approx. 3.5kgf/cm²	ADP41610	ADP42610	——	——
	490.3kPa	approx. 5.0kgf/cm²	ADP41710	ADP42710	——	——
	833.6kPa	approx. 8.5kgf/cm²	ADP41810	ADP42810	——	——
	980.7kPa	approx. 10.0kgf/cm²	ADP41910	ADP42910	ADP41913	ADP42913
Economy type (Without glass base)	40.0kPa	approx. 0.4kgf/cm²	——	——	ADP41A23	ADP42A23
	49.0kPa	approx. 0.5kgf/cm²	ADP41320	ADP42320	——	——

SPECIFICATIONS

Type		Standard type (With glass base)												Economy type (Without glass base)	
Type of pressure		Gauge pressure													
Pressure medium		Air (For other medium, please consult us.)													
Rated pressure	Unit: kPa	4.9	14.7	34.3	49.0	98.1	196.1	343.2	490.3	833.6	980.7	98.1	980.7	40.0	49.0
	Unit: kgf/cm^2 (approx.)	0.05	0.15	0.35	0.5	1.0	2.0	3.5	5.0	8.5	10.0	1.0	10.0	0.4	0.5
Max. applied pressure		Twice the rated pressure								1.5 times the rated pressure		Twice the rated pressure	1.5 times the rated pressure	Twice the rated pressure	
Bridge resistance		5000±1000 Ω										3300±700 Ω		3300±600 Ω	5000±1000 Ω
Ambient temperature		–20 to 100°C –4 to 212°F (no freezing or condensation)												–5 to +50°C +23 to +122°F	–20 to +100°C –4 to +212°F
Storage temperature		–40 to 120°C –40 to 248°F (no freezing or condensation)												–20 to +70°C –4 to +158°F	–40 to +120°C –40 to +248°F
Temperature compensation range		0 to 50°C 32 to 122°F										0 to 60°C 32 to 140°F		5 to 45°C 41 to 113°F	0 to 50°C 32 to 122°F
Drive current (constant current)		1.5 mA DC										1.0 mA DC		1.5 mA DC	
Output span voltage		40±20 mV	100±40 mV									65±25 mV		43.5±22.5 mV	85±45 mV
Offset voltage		±20 mV												±15 mV	±25 mV
Linearity		±0.7%FS	±0.5%FS	±0.3%FS					±0.5%FS	±0.6%FS		±1.0%FS		±0.3%FS	
Pressure hysteresis		±0.6%FS	±0.4%FS	±0.2%FS					±0.4%FS			±1.0%FS		±0.7%FS	
Offset voltage-temperature characteristics (0 to 50°C 32 to 122°F)		±15%FS	±5.0%FS									±3.5%FS		±10%FS	±8%FS
Sensitivity-temperature characteristics (0 to 50°C 32 to 122°F)		±10%FS	±2.5%FS											±1.3%FS	±2.5%FS

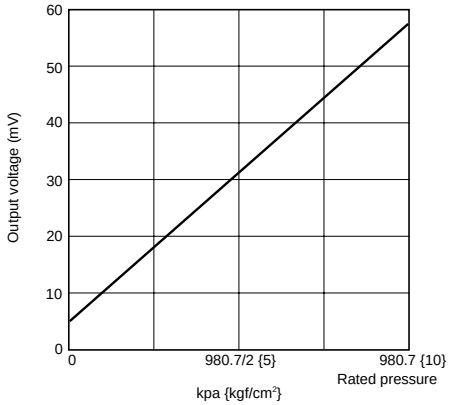
Notes) 1. Unless otherwise specified, measurements were taken with a drive current of ±0.01 mA and humidity ranging from 25% to 85%.
2. Please consult us if a pressure medium other than air is to be used.
3. This is the regulation which applies within the compensation temperature range.
4. Please consult us if the intended use involves a negative pressure.

DATA

1. Characteristics data

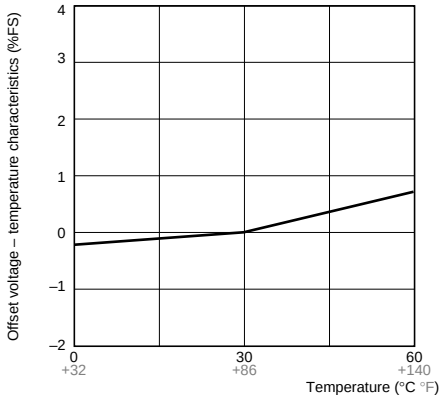
1-<1> Output characteristics

ADP41913
Drive current: 1.0 mA; temperature: 30°C 86°F



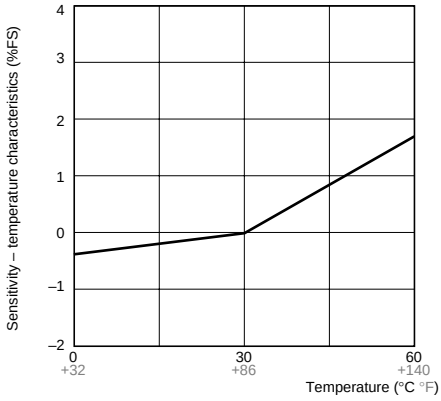
1-<2> Offset voltage – temperature characteristics

ADP41913
Drive current: 1.0 mA; rating ±3.5%FS



1-<3> Sensitivity – temperature characteristics (%FS)

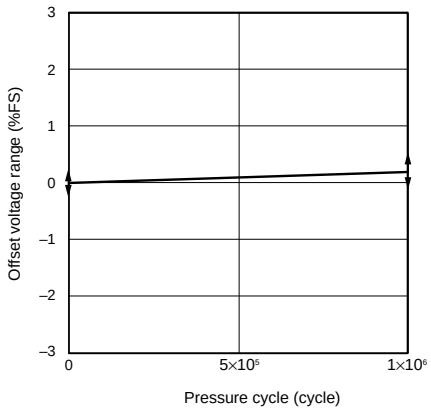
ADP41913
Drive current: 1.0 mA; rating ±2.5%FS



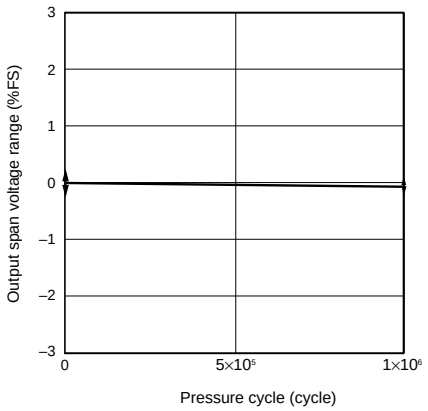
2. Pressure cycle range (0 to rated pressure)

Tested sample: ADP41913, temperature: 100°C 212°F, No. of cycle: 1×10^6

2-<1> Offset voltage range



2-<2> Output span voltage range



Even after testing for 1 million times, the variations in the offset voltage and output span voltage are minimal.

3. Evaluation test

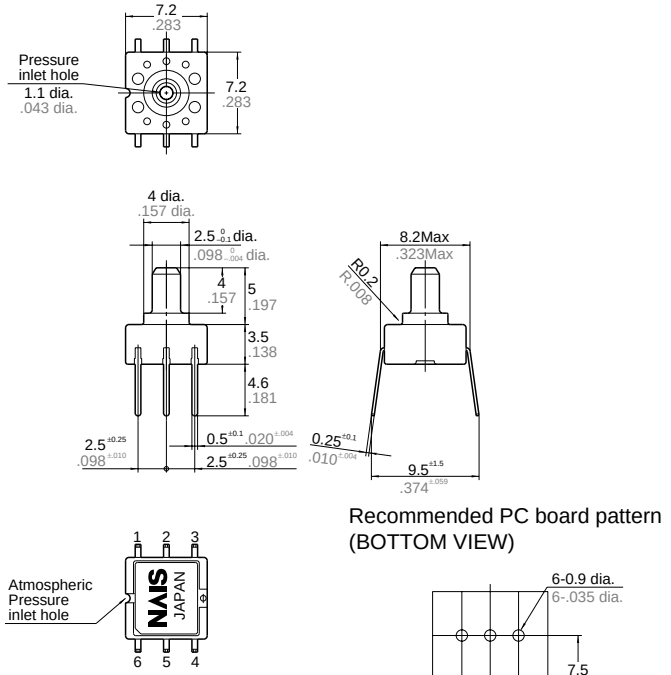
Tested item		Tested condition	Result
Environmental characteristics	Storage at high temperature	Temperature: Left in a 120°C 248°F constant temperature bath Time: 1,000 hrs.	Passed
	Storage at low temperature	Temperature: Left in a –40°C –40°F constant temperature bath Time: 1,000 hrs.	Passed
	Humidity	Temperature/humidity: Left at 40°C 104°F, 90% RH Time: 1,000 hrs.	Passed
	Temperature cycle	Temperature: –40°C to 120°C –40°F to 248°F 1 cycle: 30 min. Times of cycle: 100	Passed
Endurance characteristics	High temperature/high humidity operation	Temperature/humidity: 40°C 104°F, 90% RH Operation times: 10^6, rated voltage applied	Passed
Mechanical characteristics	Vibration resistance	Double amplitude: 1.5 mm .059 inch Vibration: 10 to 55 Hz Applied vibration direction: X, Y, Z 3 directions Times: 2 hrs each	Passed
	Dropping resistance	Dropping height: 75 cm 29.528 inch Times: 2 times	Passed
	Terminal strength	Pulling strength: 9.8 N {1 kgf}, 10 sec. Bending strength: 4.9 N {0.5 kgf}, left and right 90° 1 time	Passed
Soldering Resistance	Soldered in DIP soldering bath	Temperature: 230°C 446°F Time: 5 sec.	Passed
	Temperature	Temperature: 260°C 500°F Time: 10 sec.	Passed

Note: For details other than listed above, please consult us.

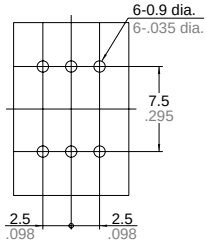
DIMENSIONS

General tolerance: ±0.3 ±.012 mm inch

1. Terminal direction: Direction opposite the pressure inlet derection ADP41□□□

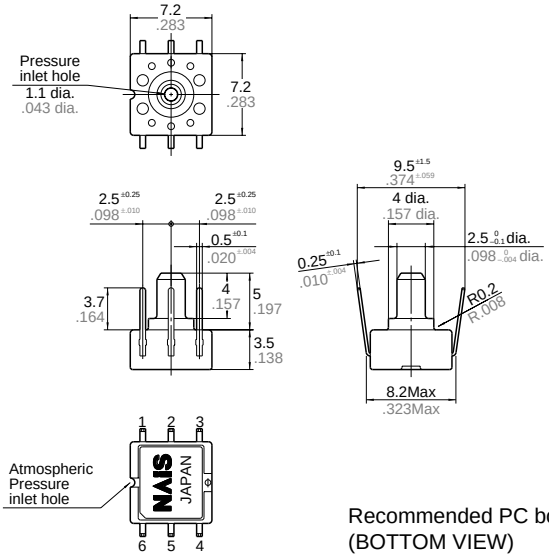


Recommended PC board pattern (BOTTOM VIEW)

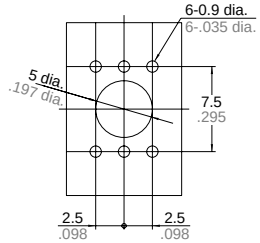


Tolerance: ±0.1 .004

2. Terminal direction: Pressure inlet direction ADP42□□□

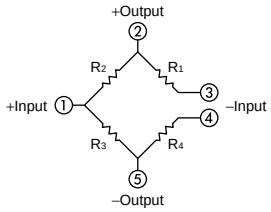


Recommended PC board pattern (BOTTOM VIEW)



Tolerance: ±0.1 .004

3. Terminal connection diagram



Terminal No.	Name
1	Power supply (+)
2	Output (+)
3	Power supply (–)
4	Power supply (–)
5	Output (–)
6	No connection

Note: Leave terminal 6 unconnected.

NOTES

1. Mounting

Use lands on the printed-circuit boards to which the sensor can be securely fixed.

2. Soldering

1) Due to its small size, the thermal capacity of the pressure sensor DIP type is low. Therefore, take steps to minimize the effects of external heat.
Dip soldering bath: Max. 260°C 500°F, 5 sec.
Soldering iron: 260 to 300°C 500 to 572°F (30W) within 5 sec.
2) Use a non-corrosive resin type of flux. Since the pressure sensor DIP type is exposed to the atmosphere, do not allow flux to enter inside.

3. Cleaning

1) Since the pressure sensor chip is exposed to the atmosphere, do not allow cleaning fluid to enter inside.
2) Avoid ultrasonic cleaning since this may cause breaks or disconnections in the wiring.

4. Environment

Consult with us before using or storing the pressure sensor chip in a place exposed to corrosive gases (such as the gases given off by organic solvents, sulfites, hydrogen sulfides, etc.) which will adversely affect the performance of the pressure sensor chip.

5. Quality check under actual loading conditions

1) To assure reliability, check the sensor under actual loading conditions. Avoid any situation that may adversely affect its performance.
2) As for test data, please contact us.

6. Other handling precautions

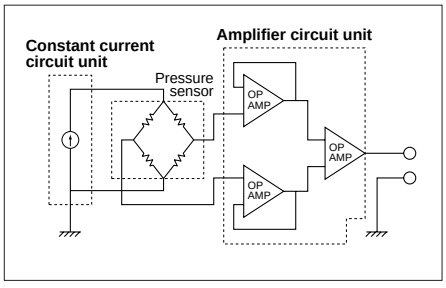
1) That using the wrong pressure range or mounting method may result in accidents.
2) Air can be used directly as a pressure medium. Consult with us before using a corrosive gas (such as a gas given off by an organic solvent, sulfite or hydrogen sulfide) as the pressure medium.
3) The pressure sensor chip is positioned inside the pressure inlet. Never poke wires or other foreign matter through the pressure inlet since they may damage the chip or block the inlet. Avoid use when the atmospheric pressure inlet is blocked.
4) Leave pin No. 6 unconnected since the pressure sensor chip may be damaged if a voltage is applied to this pin.
5) Use an operating pressure which is within the rated pressure range. Using a pressure beyond this range may cause damage.
6) Since this pressure sensor chip does not have a water-proof construction, consult with us if it is to be used in a location where it may be sprayed with water, etc.
7) Avoid using the pressure sensor chip in an environment where condensation may form. Furthermore, its output may fluctuate if any moisture adhering to it freezes.
8) The pressure sensor chip is constructed in such a way that its output will fluctuate when it is exposed to light. Especially when pressure is to be applied by means of a transparent tube, take steps to prevent the pressure sensor chip from being exposed to light.
9) Avoid using the pressure sensor chip where it will be susceptible to ultrasonic or other high-frequency vibration.
10) Since static charge can damage the pressure sensor chip, bear in mind the following handling precautions.

- When storing the pressure sensor chips, use a conductive material to short the pins or wrap the entire chip in aluminum foil. Plastic containers should not be used to store or transport the chips since they readily become charged.
- When using the pressure sensor chips, all the charged articles on the bench surface and the work personnel should be grounded so that any ambient static will be safely discharged.

11) Due to the pressures involved, give due consideration to the securing of the pressure sensor DIP type and to the securing and selection of the inlet tube. Consult us if you have any queries.

APPLICATION CIRCUIT DIAGRAM (EXAMPLE)

The pressure sensor is designed to convert a voltage by means of constant current drive and then, if necessary, it amplifies the voltage for use. The circuit shown below is a typical example of a circuit in which the pressure sensor is used.



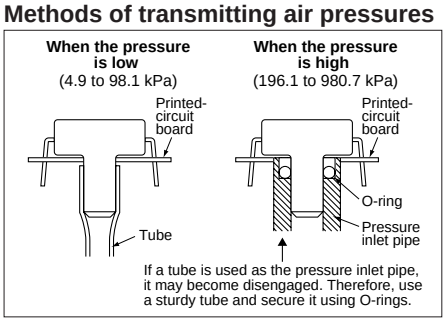
MOUNTING METHOD

The general method for transmitting air pressures differs depending on whether the pressure is low or high.

• Checkpoints for use

<1> Select a pressure inlet pipe which is sturdy enough to prevent pressure leaks.
<2> Fix the pressure inlet pipe securely so as to prevent pressure leaks.
<3> Do not block the pressure inlet pipe.

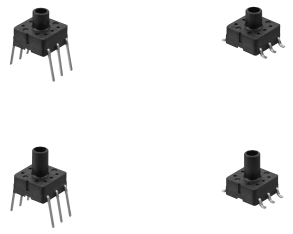
Methods of transmitting air pressures



NAiS

Pressure sensor with built-in amplification and temperature compensation circuit

PS-A PRESSURE SENSOR
(built-in amplification and temperature compensating circuit)



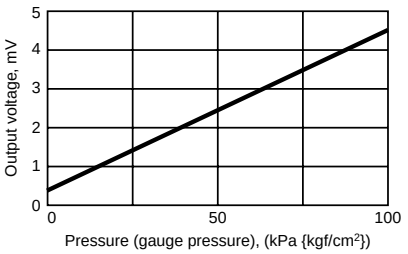
FEATURES

1. Contains built-in amplification and temperature compensation circuit. Circuit design and adjustment of characteristics are not required by users.

2. High-level precision and high reliability realized. (Overall accuracy is ±1.25% FS.)

3. Compact pressure sensor unit that saves space.
Same size and footprint (7.0 mm (W) x 7.2 mm (D)) as previous PS pressure sensor.

Example of pressure characteristics
(ADP5140)
Drive voltage: 5V DC rated voltage;
ambient temperature: 25°C 77°F



TYPICAL APPLICATIONS

- **Gas equipment: Microprocessor gas meter, gas leakage detector**
- **Industrial equipment: Absorption device, etc.**

ORDERING INFORMATION

Ex. ADP 5 □ □ □

Part No.	Terminal profile	Rated pressure	Pressure inlet hole length
ADP5: PS-A pressure sensor	1: DIP terminal 2: SMD terminal	0: ±100 kPa 1: –100 kPa 2: 25 kPa 3: 50 kPa 4: 100 kPa 5: 200 kPa 6: 500 kPa 7: 1,000 kPa	0: 3 mm .118 inch 1: 5 mm .197 inch

PRODUCT TYPES

Pressure inlet hole length / Terminal / Pressure	Part No. 3mm DIP terminal	Part No. 5mm DIP terminal	Part No. 3mm SMD terminal	Part No. 5mm SMD terminal
±100kPa	ADP5100	ADP5101	ADP5200	ADP5201
–100kPa	ADP5110	ADP5111	ADP5210	ADP5211
25kPa	ADP5120	ADP5121	ADP5220	ADP5221
50kPa	ADP5130	ADP5131	ADP5230	ADP5231
100kPa	ADP5140	ADP5141	ADP5240	ADP5241
200kPa	ADP5150	ADP5151	ADP5250	ADP5251
500kPa	ADP5160	ADP5161	ADP5260	ADP5261
1,000kPa	ADP5170	ADP5171	ADP5270	ADP5271

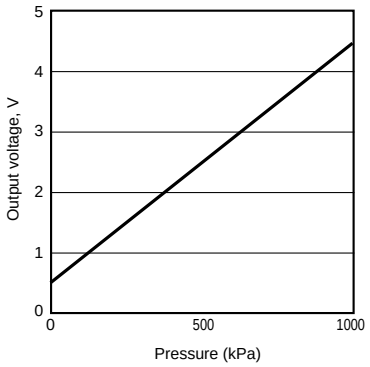
SPECIFICATIONS

Type		Specifications								Remarks
Type of pressure		Gauge pressure								
Pressure medium		Air								Note*1
Rated pressure	Unit: kPa	±100	–100	25	50	100	200	500	1,000	
Drive voltage		5±0.25V DC								
Temperature compensation range		0 to 50°C								
Offset voltage		2.5±0.05	0.5±0.05V							Note*2
Rated output voltage		4.5±0.05 (when +100kPa)	4.5±0.05V							Note*2
Overall accuracy		±1.25%FS								Note*2 Note*3
Current consumption		Max. 10mA								
Output impedance		Approx. 50Ω								
Source current		Max. 0.2mA								
Sink current		Max. 2mA								

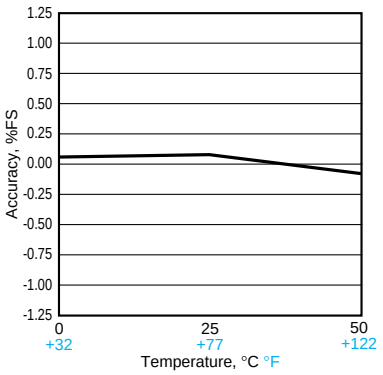
Notes) 1. Please consult us for pressure media other than air.
2. Indicates output when drive voltage is 5 V. Although output fluctuates due to fluctuations in the drive voltage, this is not included.
3. Overall accuracy indicates the accuracy of the offset voltage and rated output voltage at temperatures between 0 and 50°C. (FS=4V)
4. Where no particular temperature is indicated, the specification is for use at 25°C

DATA

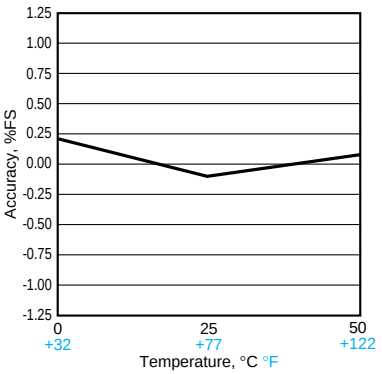
1-(1) Output voltage
ADP5170
Drive voltage: 5V DC;
temperature: 25°C 77°F
Applied pressure: 0 to +1,000kPa



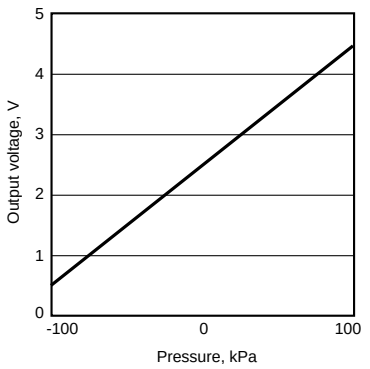
1-(2) Overall accuracy (Offset voltage)
ADP5170
Drive voltage: 5V DC;
temperature: 0 to 50°C 32 to 122°F
Applied pressure: 0kPa



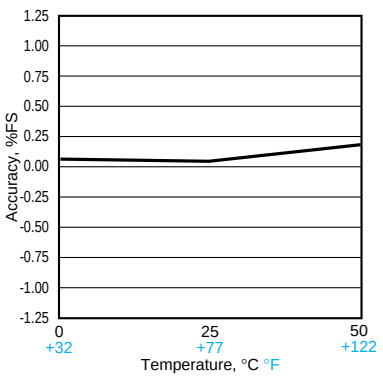
1-(3) Overall accuracy (Rated output voltage)
ADP5170
Drive voltage: 5V DC;
temperature: 0 to 50°C 32 to 122°F
Applied pressure: +1,000kPa



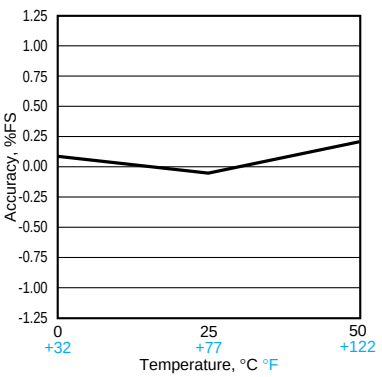
2-(1) Output voltage
ADP5100
Drive voltage: 5V DC;
temperature: 25°C 77°F
Applied pressure: –100 to +100kPa



2-(2) Overall accuracy (Offset voltage)
ADP5100
Drive voltage: 5V DC;
temperature: 0 to 50°C 32 to 122°F
Applied pressure: 0kPa



2-(3) Overall accuracy (Rated output voltage)
ADP5100
Drive voltage: 5V DC;
temperature: 0 to 50°C 32 to 122°F
Applied pressure: +100kPa



3. Evaluation test

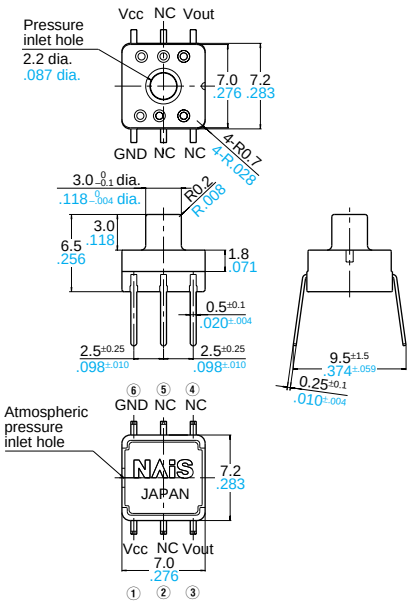
Tested item		Tested condition	Result
Environmental characteristics	Storage at high temperature	Temperature: Left in a 85°C 185°F constant temperature bath Time: 100 hrs.	Passed
	Storage at low temperature	Temperature: Left in a –20°C –4°F constant temperature bath Time: 100 hrs.	Passed
	Humidity	Temperature/humidity: Left at 40°C 104°F, 90% RH Time: 100 hrs.	Passed
	Temperature cycle	Temperature: –20°C to 85°C –4°F to 185°F 1 cycle: 30 min. Times of cycle: 100	Passed
Endurance characteristics	High temperature/high humidity operation	Temperature/humidity: 40°C 104°F, 90% RH Operation times: 10^6, rated voltage applied	Passed
Mechanical characteristics	Vibration resistance	Double amplitude: 1.5 mm .059 inch Vibration: 10 to 55 Hz Applied vibration direction: X, Y, Z 3 directions Times: 2 hrs each	Passed
	Dropping resistance	Dropping height: 75 cm 29.528 inch Times: 2 times	Passed
	Terminal strength	Pulling strength: 9.8 N {1 kgf}, 10 sec. Bending strength: 4.9 N {0.5 kgf}, left and right 90° 1 time	Passed
Soldering Resistance	Soldered in DIP soldering bath	Temperature: 230°C 446°F Time: 5 sec.	Passed
	Temperature (DIP)	Temperature: 260°C 500°F Time: 10 sec.	Passed

Note: For details other than listed above, please consult us.

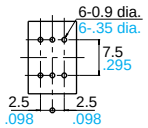
DIMENSIONS

mm inch
General tolerance: ±0.3 ±.012

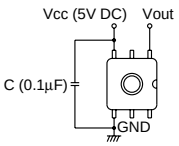
1. DIP terminal (Pressure inlet hole: 3mm) ADP51*0



Recommended PC board pattern
(TOP VIEW 2:1)



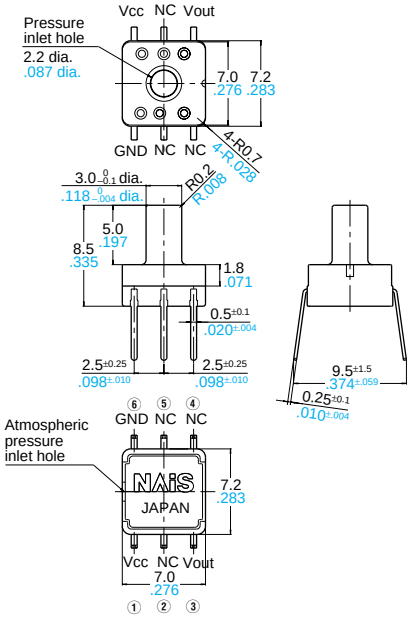
Terminal connection diagram



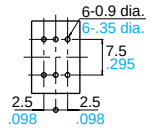
Terminal No.	Name
1	Vcc (Power supply [+])
2	NC (No connection)
3	Vout (Output)
4	NC (No connection)
5	NC (No connection)
6	GND (Ground)

2. DIP terminal (Pressure inlet hole: 5mm) ADP51*1

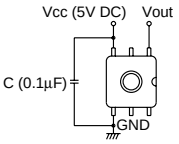
mm inch
General tolerance: ±0.3 ±.012



Recommended PC board pattern
(TOP VIEW 2:1)

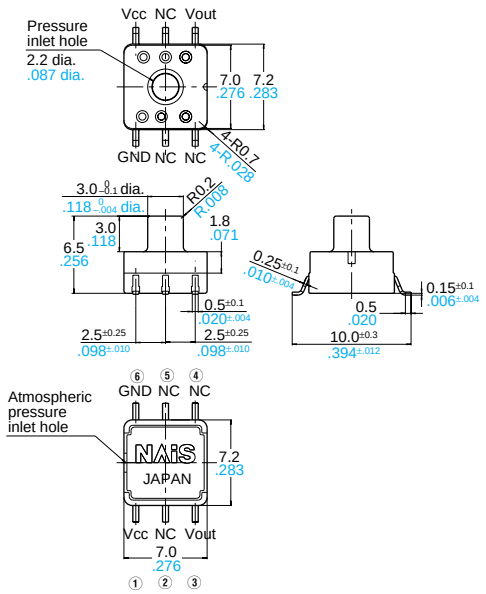


Terminal connection diagram

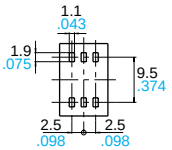


Terminal No.	Name
1	Vcc (Power supply [+])
2	NC (No connection)
3	Vout (Output)
4	NC (No connection)
5	NC (No connection)
6	GND (Ground)

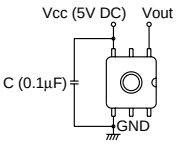
3. SMD terminal (Pressure inlet hole: 3mm) ADP52*0



Recommended PC board pattern
(TOP VIEW 2:1)



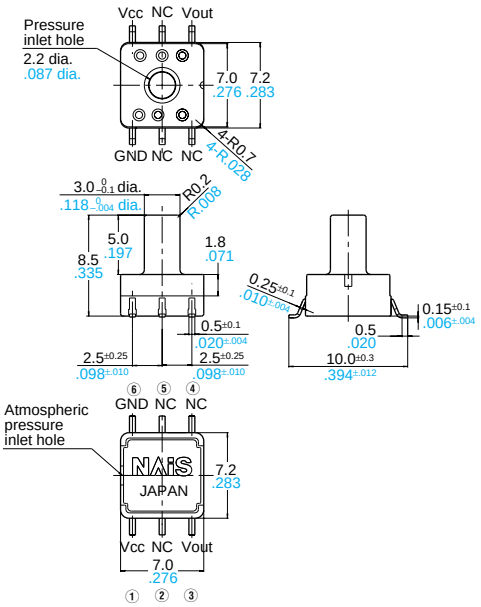
Terminal connection diagram



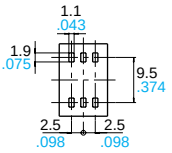
Terminal No.	Name
1	Vcc (Power supply [+])
2	NC (No connection)
3	Vout (Output)
4	NC (No connection)
5	NC (No connection)
6	GND (Ground)

4. SMD terminal (Pressure inlet hole: 5mm) ADP52*1

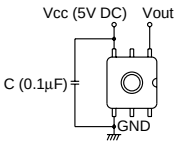
mm inch
General tolerance: ±0.3 ±.012



Recommended PC board pattern
(TOP VIEW 2:1)



Terminal connection diagram

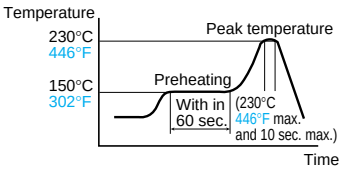


Terminal No.	Name
1	Vcc (Power supply [+])
2	NC (No connection)
3	Vout (Output)
4	NC (No connection)
5	NC (No connection)
6	GND (Ground)

NOTES

1. Mounting
Use lands on the printed-circuit boards to which the sensor can be securely fixed.

2. Soldering
Due to its small size, the thermal capacity of the pressure sensor DIP type is low. Therefore, take steps to minimize the effects of external heat.
Damage and changes to characteristics may occur due to heat deformation.
Use a non-corrosive resin type of flux.
Since the pressure sensor DIP type is exposed to the atmosphere, do not allow flux to enter inside.
1) Manual soldering
• Set the soldering tip from 260 to 300°C (30W), and solder for no more than 5 seconds.
• Please note that output may change if the pressure is applied on the terminals when the soldering.
• Thoroughly clean the soldering iron.
2) DIP soldering (DIP terminal type)
• Please keep the DIP solder bath temperature no higher than 260°C. When soldering, heat should be applied no longer than five seconds.
• When mounting onto a PCB of low thermal capacity, please avoid DIP soldering as this may cause heat deformity.
3) Reflow soldering (SMD terminal type)
• The recommended reflow temperature profile conditions are given below.
• We recommend the screen solder printing method as the method for cream solder printing.
• Please refer to the recommended PCB specification diagram for the PCB foot pattern.
• Self alignment may not always work as expected; therefore, please carefully adjust the position of the terminals and pattern.
• The profile temperature is the value measured on the PCB near the terminals.
• When doing reflow soldering on the back of the PC board after performing sensor reflow, please fix the sensor with adhesive and so on.
4) Solder reworking
• Finish reworking in one operation.
• For reworking of the solder bridge, use a soldering iron with a flat tip. Please do not add more flux when reworking.
• Please use a soldering iron that is below the temperature given in the specifications in order to maintain the correct temperature at the tip of the soldering iron.
5) Too much force on the terminals will cause deformation and loss in effectiveness of the solder. Therefore, please avoid dropping and careless handling of the product.
6) Please control warping of the PCB within 0.05 mm of the sensor width.
7) When cut folding the PCB after mounting the sensor, take measures to prevent stress to the soldered parts.
8) The sensor terminals are designed to be exposed, so contact of the terminals with metal shards and the like will cause output errors. Therefore, please be careful and prevent things such as metal shards and hands from contacting the terminals.
9) To prevent degradation of the PCB insulation after soldering, please be careful not to get chemicals on the sensor when coating.
10) Please consult us regarding the use of lead-free solder.



3. Connections
1) Please perform connections correctly in accordance with the terminal connection diagram. In particular, be careful not to reverse wire the power supply as this will cause damage or degrade to the product.
2) Do not connect terminals that are not used. This can cause malfunction of the sensor.

4. Cleaning

1) Since the pressure sensor chip is exposed to the atmosphere, do not allow cleaning fluid to enter inside.

2) Avoid ultrasonic cleaning since this may cause breaks or disconnections in the wiring.

5. Environment

1) Please avoid using or storing the pressure sensor chip in a place exposed to corrosive gases (such as the gases given off by organic solvents, sulfurous acid gas, hydrogen sulfides, etc.) which will adversely affect the performance of the pressure sensor chip.

2) To ensure resistance to power supply superimposed noise, you must provide a capacitor at the power supply input terminal of the sensor in order to stabilize the power supply voltage. We recommend to provide 0.1 µF and 1,000 pF capacitor in parallel. Please confirm the noise resistance with the actual equipment and choose adequate capacitor.

3) Since the internal circuitry may be destroyed if an external surge voltages is supplied, provide an element which will absorb the surges.

4) Malfunctioning may occur if the product is in the vicinity of electrical noise such as that from static electricity, lightning, a broadcasting station, an amateur radio, or a mobile phone.

5) Since this pressure sensor chip does not have a water-proof construction, please do not use the sensor in a location where it may be sprayed with water, etc.

6) Avoid using the pressure sensors chip in an environment where condensation may form.
Furthermore, its output may fluctuate if any moisture adhering to it freezes.

7) The pressure sensor chip is constructed in such a way that its output will fluctuate when it is exposed to light. Especially when pressure is to be applied by means of a transparent tube, take steps to prevent the pressure sensor chip from being exposed to light.

8) Avoid using the pressure sensor chip where it will be susceptible to ultrasonic or other high-frequency vibration.

6. Quality check under actual loading conditions

To assure reliability, check the sensor under actual loading conditions. Avoid any situation that may adversely affect its performance.

7. Other handling precautions

1) That using the wrong pressure range or mounting method may result in accidents.

2) The only direct pressure medium you can use is dry air. The use of other media, in particular, corrosive gases (organic solvent based gases, sulfurous acid based gases, and hydrogen sulfide based gases, etc.) and media that contains moisture or foreign substances will cause malfunction and damage. Please do not use them.

3) The pressure sensor chip is positioned inside the pressure inlet. Never poke wires or other foreign matter through the pressure inlet since they may damage the chip or block the inlet. Avoid use when the atmospheric pressure inlet is blocked.

4) Use an operating pressure which is within the rated pressure range. Using a pressure beyond this range may cause damage.

5) Since static charge can damage the pressure sensor chip, bear in mind the following handling precautions.

• When storing the pressure sensor chips, use a conductive material to short the pins or wrap the entire chip in aluminum foil. Plastic containers should not be used to store or transport the chips since they readily become charged.

• When using the pressure sensor chips, all the charged articles on the bench surface and the work personnel should be grounded so that any ambient static will be safely discharged.

6) Based on the pressure involved, give due consideration to the securing of the pressure sensor DIP type and to the securing and selection of the inlet tube. Consult us if you have any queries.

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